

CLAIMS

1. A motion sensor mounted on an assembly isolated from vibrations by
5 suspension members, wherein the motion sensor comprises:
a vibrating member mounted on the assembly; and
a sensor mounted on the assembly for detecting movement of the
vibrating member in response to rotation of the assembly;
wherein the sensor is electronically coupled to the suspension
10 members.
2. A motion sensor as in claim 1 further comprising:
digital electronics mounted on the assembly and coupled to the
sensor for providing digital data responsive to rotation; wherein the digital data is
15 transmitted through at least one of the suspension members.
3. A motion sensor as in claim 2 wherein the one suspension member is a
conductive helical spring.
- 20 4. A motion sensor gyroscope as in claim 3 wherein the digital data is
communicated serially using a digital communication protocol.
5. A motion sensor rate gyroscope as in claim 2 wherein the digital electronics
stores a calibration value and calibrates the digital data in response thereto.
25 6. A motion sensor as in claim 5 wherein the calibration value is generated
external to the digital electronics and transmitted to the digital electronics
digitally over at least one of the suspension members.
- 30 7. A motion sensor as in claim 5 wherein the calibration value is generated by
the digital electronics.
8. A motion sensor as in claim 6 wherein another calibration value is generated
by the digital electronics.
35 9. A motion sensor as in claim 2 wherein the digital electronics stores a digital
value transmitted over at least one of the suspension members that controls the
amplitude of vibration of the vibrating member.

10. A motion sensor as in claim 2 further comprising a driver coupled to the vibrating member, wherein the digital electronics stores a digital value transmitted over at least one of the suspension members that controls the start-up frequency of the driver

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11. A motion sensor as in claim 7 wherein the digital electronics includes an auto-calibration loop that determines the calibration factor and wherein the digital electronics further stores a digital startup value transmitted over at least one of the suspension members that seeds the calibration factor at startup.

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12. A motion sensor mounted on an assembly isolated from vibrations by suspension members, wherein the motion sensor comprises:

a vibrating member mounted on the assembly; and

a sensor mounted on the assembly for detecting movement of the

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vibrating member in response to rotation of the assembly;

wherein the sensor is in digital communication with a communications interface mounted off of the assembly.

13. A motion sensor as in claim 12 further comprising:

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digital electronics mounted on the assembly and coupled to the sensor for providing digital data responsive to rotation; wherein the digital data is transmitted to the communications interface.

14. A motion sensor as in claim 13 wherein the digital data is communicated to the communications interface using a serial digital communication protocol.

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15. A motion sensor as in claim 14 wherein the digital electronics stores a calibration value and calibrates the digital data in response thereto.

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16. A motion sensor as in claim 15 wherein the calibration value is generated external to the digital electronics and transmitted to the digital electronics.

17. A motion sensor as in claim 15 wherein the calibration value is generated by the digital electronics.

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18. A motion sensor as in claim 13 wherein another calibration value is generated by the digital electronics.

19. A motion sensor as in claim 13 wherein the digital electronics stores a digital value transmitted to the digital electronics that controls the amplitude of vibration of the vibrating member.

5 20. A rotational rate gyroscope as in claim 13 further comprising a driver coupled to the vibrating member, wherein the digital electronics stores a digital value transmitted to the digital electronics that controls the start-up frequency of the driver.

10 21. A rotational rate gyroscope as in claim 18 wherein the digital electronics includes an auto-calibration loop that determines a calibration factor and wherein the digital electronics further stores a digital startup value transmitted to the digital electronics that seeds the calibration factor at startup.

15 22. A rotational rate gyroscope mounted on an assembly isolated from vibrations by helical springs, wherein the gyroscope comprises:
a vibrating member mounted on the assembly;
a sensor mounted on the assembly for detecting movement of the
vibrating member in response to rotation of the assembly; and
20 digital electronics mounted on the assembly and coupled to the sensor for providing digital data responsive to rotation; wherein the digital data is transmitted through at least one of the helical springs.